REMARKS

The Applicant thanks the Examiner for the careful consideration of this application. Claims 1 and 3-29 are currently pending. Claims 1, 3, 20, and 26 have been amended. Claim 2 has been cancelled, without prejudice. Based on the foregoing amendments and the following remarks, the Applicant requests that the Examiner reconsider all outstanding rejections and that they be withdrawn.

Rejections under 35 U.S.C. § 103

(1) The Office Action rejected claims 1, 5, 6, 8-12, and 17-19 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,817,756 to Carr et al. ("Carr") in view U.S. Patent Application Publication No. 2005/0067218 to Bristow et al. ("Bristow"), the article titled Mechanical Property of Metallic Closed Cellular Materials Containing Organic Material for Passive Damping and Energy-Absorbing Systems to Kishimoto et al. ("Kishimoto"), and the article titled Study on Nonlinear Damping Properties of Foamed Al to Liu et al. ("Liu").

The Applicant traverses this rejection. Nevertheless, solely to further prosecution, claim 1 has been amended to incorporate the subject matter of claim 2, which is not subject to this rejection. Claims 5, 6, 8-12, and 17-19 depend from claim 1. Accordingly, the Applicant submits that this rejection is now moot.

(2) The Office Action rejected claims 2-4 under 35 U.S.C. § 103(a) as being unpatentable over Carr in view of Bristow, Kishimoto, and Liu, and further in view of U.S.

Patent No. 5,175,401 to Arcas et al. ("Arcas"). Independent claim 1 has been amended to incorporate the subject matter of claim 2, now cancelled. Accordingly, this rejection will be discussed in reference to amended claim 1. The Applicant traverses this rejection for at least the following two reasons.

First, no reasonable combination of Carr, Bristow, Kishimoto, Liu, and Arcas discloses or renders obvious a "top sheet compris[ing] a layer of a metallic foam, wherein the top sheet has a non-linearity factor within a range between 1.0 and 3.0," as recited by claim 1. The Office Action aligns the woven wire mesh 96 of Carr's FIG. 6 with the claimed "top sheet," and aligns the metallic foam 35 of Bristow's FIGS. 3-6 with the claimed "metallic foam." The Office Action acknowledges that the proffered combination of Carr, Bristow, Kishimoto, and Liu fails to disclose the claimed "non-linearity factor within a range between 1.0 and 3.0," but instead asserts that the claimed range would have been obvious in view Arcas at column 2, lines 13-17, where it states that "[t]he perforated sheet comprises a graphite epoxy weave woven to . . . provide[] low non-linearity factors." The Applicant respectfully disagrees that any reasonable combination of Carr, Bristow, Kishimoto, Liu, and Arcas discloses or renders obvious the "top sheet [having] a non-linearity factor within a range between 1.0 and 3.0." as claimed.

Arcas fails to disclose or teach a specific non-linearity factor for it's perforated top sheet, let alone the claimed "non-linearity factor within a range between 1.0 and 3.0." Rather, Arcas generally discloses that its top sheet is woven to provide "low non-linearity factors." (See Arcas at col. 2, ll. 13-17.) One of ordinary skill in the art considering Arcas's *general disclosure* of "low non-linearity factors" would not be lead to use a top sheet having the claimed "non-linearity

factor within a range between 1.0 and 3.0."

Furthermore, Carr, Bristow, Kishimoto, and Liu all fail to provide the missing disclosure of a "non-linearity factor within a range between 1.0 and 3.0." As acknowledged by the Office Action, Carr fails to disclose or suggest non-linearity of it's woven wire mesh 96. Bristow discloses that its metallic foam 35 has *non-linear* characteristics. (See Bristow at ¶¶ 0019 and 0021.) Kishimoto discloses a material having a stress-strain curve with a linear elastic part, a plateau part, and a wavy part, but provides no specific value or range for the linear elastic part. (See Kishimoto at Abstract, 6th sentence.) Liu merely discloses that foamed aluminum Al possesses *some* nonlinear properties. (See Liu at Abstract, 2nd sentence.) None of the *five* references relied on for the rejection of claim 2 (now claim 1) discloses a specific non-linearity factor, let alone the claimed "non-linearity factor within a range between 1.0 and 3.0." Therefore, one of ordinary skill in the art considering these *five* references would not be motivated to provide Carr's woven wire mesh 96 with a "non-linearity factor within a range between 1.0 and 3.0." Accordingly, no reasonable combination of Carr, Bristow, Kishimoto, Liu, and Arcas discloses or renders obvious a "top sheet compris[ing] a layer of a metallic foam, wherein the top sheet has a non-linearity factor within a range between 1.0 and 3.0," as recited by claim 1.

Second, the combination of Carr, Bristow, Kishimoto, Liu, and Arcas is improper because Liu teaches away from a "top sheet compris[ing] a layer of a metallic foam, wherein the top sheet has a non-linearity factor within a range between 1.0 and 3.0," as recited by claim 1. The Office Action refers to Arcas at column 2, lines 13-17 for disclosure of "low non-linearity

factors." However, column 2, lines 13-17 discloses a sheet of graphite epoxy, which is a *non-metallic* material. Arcas discloses another embodiment having a metallic sheet (aluminum) at column 2, lines 6-9, however, low non-linearity factors are *not* disclosed in connection with the metallic sheet. Since Arcas discloses a *non-metallic* embodiment with "low-linearity factors," but is silent about low-linearity with respect to the metallic embodiment, one of ordinary skill in the art would be *lead away* from a metallic sheet having low non-linearity factors. Accordingly, Arcas teaches away from a "top sheet compris[ing] a layer of a metallic foam, wherein the top sheet has a non-linearity factor within a range between 1.0 and 3.0," as recited by claim 1.

The Applicant submits that claim 1 is patentable over any reasonable combination of Carr, Bristow, Kishimoto, Liu, and Arcas for at least the foregoing reasons. Claims 3-6, 8-12, and 17-19 depend from claim 1, and are patentable for at least the same reasons.

(3) The Office Action rejected claim 7 under 35 U.S.C. § 103(a) as being unpatentable over Carr in view of Bristow, Kishimoto, and Liu, and further in view of U.S. Patent No. 6,182,787 to Kraft et al. ("Kraft"). Claim 7 depends from claim 1, which, as demonstrated above, is patentable over Carr, Bristow, Kishimoto, and Liu. Kraft does remedy the deficiencies of Carr, Bristow, Kishimoto, and Liu. Accordingly, the Applicant submits that claim 7 is patentable over any reasonable combination of Carr, Bristow, Kishimoto, Liu, and Kraft.

(4) The Office Action rejected claims 20 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Carr in view of Bristow, Kishimoto, and Liu, and further in view of U.S.

Patent No. 4,291,080 to Ely et al. ("Ely"). The Applicant traverses this rejection. Nevertheless, solely to further prosecution, claim 20 has been amended to recite that "the top sheet has a non-linearity factor within a range between 1.0 and 3.0," which was previously recited by claim 2 and subject to rejection over Arcas. The Applicant submits that claim 20 is patentable over Carr, Bristow, Kishimoto, Liu, Ely, and Arcas for at least the following two reasons.

First, as demonstrated above in subparagraph (2), Carr, Bristow, Kishimoto, Liu, and Arcas fail to disclose or render obvious "the top sheet [having] a non-linearity factor within a range between 1.0 and 3.0." Ely does not provide the missing disclosure or teaching. Accordingly, no reasonable combination of Carr, Bristow, Kishimoto, Liu, Arcas, and Ely discloses or renders obvious "the top sheet [having] a non-linearity factor within a range between 1.0 and 3.0," as recited by claim 20.

Second, as demonstrated above in subparagraph (2), the combination of Carr, Bristow, Kishimoto, Liu, Arcas, and Ely is improper because Arcas *teaches away* from a "top sheet including a metallic foam layer . . . wherein the top sheet has a non-linearity factor within a range between 1.0 and 3.0," as recited by claim 20.

The Applicant submits that claim 20 is patentable over Carr, Bristow, Kishimoto, Liu, Arcas, and Ely for at least the foregoing two reasons. Claim 21 depends from claim 20, and is patentable for at least the same reasons.

(5) The Office Action rejected claims 13-16 and 22-25 under 35 U.S.C. § 103(a) as being unpatentable over Carr in view of Bristow, Kishimoto, Liu, and Ely, and further in view of U.S.

Patent No. 4,867,271 to Tschudin-Mahrer ("Tschudin-Mahrer"). As an initial matter, the

Applicant notes that the Office Action does not specifically set forth a rejection of claims 15 and

24 over this combination of references. In addition, in a subsequent paragraph, the Office Action

specifically sets forth a rejection of claims 15 and 25 based on Carr in view of Bristow,

Kishimoto, Liu, Ely, and Tschudin-Mahrer, and further in view of U.S. Patent Application

Publication No. 2006/0011408 to Kempton ("Kempton"). Therefore, the Applicant assumes that

the rejection of claims 15 and 24 over Carr in view of Bristow, Kishimoto, Liu, Ely, and

Tschudin-Mahrer is a typographical error. If the Applicant's understanding is not correct, then

clarification of the rejection is requested.

Furthermore, in the rejection of claim 25, the Office Action refers to Tschudin-Mahrer at

FIG. 15. However, Thscudin-Mahrer does not contain a FIG. 15. Accordingly, the Applicant

requests that the rejection of claim 25 be withdrawn or clarified.

Notwithstanding the foregoing, claims 13-16 and 22-25 depend from independent claims

1 and 20, respectively, which as demonstrated above, are patentable over Carr in view of

Bristow, Kishimoto, and Liu. Ely and Tschudin-Mahrer do not remedy the deficiencies of Carr,

Bristow, Kishimoto, and Liu. Accordingly, the Applicant submits that claims 13-16 and 22-25

are patentable over the *six way* combination of Carr, Bristow, Kishimoto, Liu, Ely, and

Tschudin-Mahrer.

(6) The Office Action rejected claims 15 and 24 under 35 U.S.C. §103(a) as being

unpatentable over Carr in view of Bristow, Kishimoto, Liu, Ely, and Tschudin-Mahrer, and

further in view of Kempton. Claims 15 and 24 depend from claims 1 and 20, respectively. As demonstrated above, claims 1 and 20 are patentable over Carr in view of Bristow, Kishimoto, and Liu. Ely and Tschudin-Mahrer do not remedy the deficiencies of Carr, Bristow, Kishimoto, and Liu. Accordingly, claims 15 and 24 are patentable over the *seven way* combination of Carr, Bristow, Kishimoto, Liu, Ely, Tschudin-Mahrer, and Kempton.

(7) The Office Action rejected claims 26-29 under 35 U.S.C. § 103(a) as being unpatentable over Carr in view of Bristow, Kishimoto, Liu, Arcas, Ely, and Tschudin-Mahrer. The Applicant traverses this rejection. As an initial matter, the Applicant notes that the Office Action does not specifically set forth a rejection of claim 28 over this combination of references. In addition, in a subsequent paragraph, the Office Action specifically sets forth a rejection of claim 28 based on this combination of references plus Kempton. Therefore, the Applicant assumes that the rejection of claim 28 over Carr in view of Bristow, Kishimoto, Liu, Arcas, Ely, and Tschudin-Mahrer is a typographical error. If the Applicant's understanding is not correct, then clarification of the rejection is requested. The Applicant submits that claim 26 is patentable over Carr in view of Bristow, Kishimoto, Liu, Arcas, Ely, and Tschudin-Mahrer for at least the following three reasons.

First, solely to further prosecution, claim 26 has been amended to recite that "the top sheet has a non-linearity factor within a range between 1.0 and 3.0," which was previously recited by claim 2. As demonstrated above in subparagraph (2), Carr, Bristow, Kishimoto, Liu, and Arcas fail to disclose or render obvious "the top sheet [having] a non-linearity factor within a

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range between 1.0 and 3.0." Ely and Tschudin-Mahrer do not provide the missing disclosure or teaching. Accordingly, no reasonable combination of Carr, Bristow, Kishimoto, Liu, Arcas, Ely, and Thscudin-Mahrer discloses or renders obvious "the top sheet [having] a non-linearity factor within a range between 1.0 and 3.0," as recited by claim 26.

Second, no reasonable combination of Carr, Bristow, Kishimoto, Liu, Arcas, Ely, and Tschudin-Mahrer discloses or renders obvious that "the metallic foam is compressed to satisfy . . . temperature linearity requirements of the acoustic liner," as recited by claim 26. The Office Action aligns the metallic foam 35 of Bristow's FIGS. 3 to 6 with the claimed "metallic foam." The Office Action apparently asserts that the metallic foam 35 is compressed to alter flow characteristics, referring to Bristow's paragraphs 0023 and 0024. However, nowhere does Bristow disclose that the metallic foam 35 is *compressed*. Rather, Bristow discloses that the metallic foam 35 can have different zones of *different porosity*. (See Bristow at ¶ 0023.) Moreover, nowhere does Bristow disclose that the zones of different porosity satisfy *temperature* linearity requirements, as claimed. Bristow discloses that the different zones of porosity can accommodate different airflow rates or levels of sound attenuation, but does not mention *temperature*. (See Bristow at ¶ 0023.) Carr, Kishimoto, Liu, Arcas, Ely, and Tschudin-Mahrer do provide the missing disclosure or teaching. Accordingly, no reasonable combination of Carr, Bristow, Kishimoto, Liu, Arcas, Ely, and Tschudin-Mahrer discloses or renders obvious that "the metallic foam is compressed to satisfy . . . temperature linearity requirements of the acoustic liner," as recited by claim 26.

Third, as demonstrated above in subparagraph (2), the combination of Carr, Bristow,

Kishimoto, Liu, Arcas, Ely, and Tschudin-Mahrer is improper because Arcas *teaches away* from a "top sheet comprising a layer of metallic foam . . . wherein the top sheet has a non-linearity factor within a range between 1.0 and 3.0," as recited by claim 26.

The Applicant submits that claim 26 is patentable over the *seven way* combination of Carr, Bristow, Kishimoto, Liu, Arcas, Ely, and Tschudin-Mahrer for at least the foregoing three reasons. Claims 27-29 depend from claim 26, and are patentable for at least the same reasons.

(8) The Office Action rejected claim 28 under 35 U.S.C. § 103(a) as being unpatentable over Carr in view of Bristow, Kishimoto, Liu, Arcas, Ely, Tschudin-Mahrer, and Kempton. Claim 28 depends from claim 26, which as demonstrated above, is patentable over Carr in view of Bristow, Kishimoto, Liu, Arcas, Ely, and Tschudin-Mahrer. Kempton does not remedy the deficiencies of these references. Accordingly, the Applicant submits that claim 28 is patentable over the *eight way* combination of Carr, Bristow, Kishimoto, Liu, Arcas, Ely, Tschudin-Mahrer, and Kempton.

Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant, therefore, respectfully requests that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. Applicant believes that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal

communication will expedite prosecution of this application, the Examiner is hereby invited to

telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment is respectfully requested.

Respectfully submitted,

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